

No.

200000155



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Kansas Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

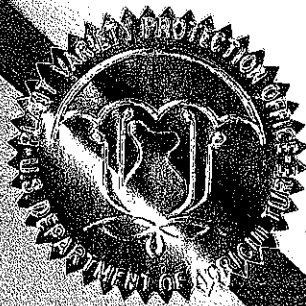
AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Betty'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this eighteenth day of April, in the year two thousand two.



Attest:

William J. ...

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Freeman

Secretary

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

1. NAME OF OWNER KANSAS AGRICULTURAL EXPERIMENT STATION		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME KS 84063-2W	3. VARIETY NAME Betty
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Waters Hall Kansas State University Manhattan, KS 66506		5. TELEPHONE (include area code) 785-532-6147	FOR OFFICIAL USE ONLY PVPO NUMBER 0000155
		6. FAX (include area code) 785-532-6563	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) University	8. IF INCORPORATED, GIVE STATE OF INCORPORATION	9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Vernon A. Schaffer Agronomy Department Kansas State University 2004 Throckmorton Hall Manhattan, KS 66506			FILING DATE 2-16-2000
			FILING AND EXAMINATION FEES: \$ 2450.00 DATE 2-16-2000 CERTIFICATION FEE: \$ 320.00 DATE 3/7/02
11. TELEPHONE (include area code) 785-532-6115	12. FAX (include area code) 785-532-6094	13. E-MAIL vas@ksu.edu	14. CROP KIND (Common Name) Wheat
15. GENUS AND SPECIES NAME OF CROP Triticum aestivum		16. FAMILY NAME (Botanical) Gramineae	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input checked="" type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input type="checkbox"/> NO (If "no," go to item 22)	
		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
		21. IF "YES" TO ITEM 20, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER George Ham		SIGNATURE OF OWNER	
NAME (Please print or type) Dr. George Ham		NAME (Please print or type)	
CAPACITY OR TITLE Assoc. Director, Agric. Experiment Station	DATE	CAPACITY OR TITLE	DATE

INSTRUCTIONS

200000155

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filing fee and \$2,150 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Belknap Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$300 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvp.htm>

ITEM

- 18a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.
- 22. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Fall, 1999 sold seed in the U.S.

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705. Telephone: (301) 504-8089.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0055 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-2791. To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal opportunity employer.

S&T-470 (6-98) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (03-96) which is obsolete.

BETTY

Exhibit A. Origin and Breeding

KS82W418/Stephens cross was made in 1984 F_1 and grown in the spring greenhouse, 1985.

1986-87: A single F_2 plant, KS84063-9, was selected based on disease resistance.

1987-88: F_3 seed from KS84063-9 was planted in the fall of 1987 and heads were selected in the spring of 1988.

1988-89: $F_{3,4}$ head rows were planted in the fall of 1988. A unique head row, KS84063-9-39, was selected and bulked in spring 1989.

1989-90: An $F_{3,5}$ line, KS84063-9-39, was planted in a preliminary yield trial.

1990-91: KS84063-9-39, an $F_{3,6}$ line, was planted in a second year preliminary trial in 1990. Due to segregation for maturity, individual spikes were taken from this line. Betty was selected from a single head of a white seeded plant in spring of 1991.

1992: Betty was increased in K-State greenhouses.

1993: Tested in a small trial to compare performance with Jagger.

1994: Tested in hard white yield trial.

1995: Tested in hard white yield trial.

1996: Tested in the Kansas Intra State Nursery and Southern Regional Performance Nursery (tested as KS84063-2W).

1997: Tested in the Kansas Intra State Nursery, the Southern Regional Performance Nursery and the Kansas Wheat Variety Tests.

Betty is uniform, variants are limited to darker green plants or plants with darker glumes that occur at a frequency of less than 1 in 1,000 taller plants or slightly later plants at a frequency less than 1 in 10,000 and plants with red seed color at a frequency of less than 1 in 200. Betty is stable. When sexually reproduced, the variety remains unchanged in its essential and distinctive characteristics. Betty has remained stable and uniform for the last 4 generations of seed production.

Betty, PVP Application
Exhibit B: Statement of Distinctness

Betty is a selection from the cultivar Jagger. It is similar to Jagger in its disease reactions but different for most other traits. Betty has hard white seed and Jagger has hard red seed. Betty has white chaff and Jagger has brown chaff. Betty is latter in heading than Jagger (Appendix A, Table 9).

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)

Kansas Agricultural Experiment Station

ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)

Waters Hall
Kansas State University
Manhattan, KS 66506

FOR OFFICIAL USE ONLY

PVPO NUMBER 200000155

VARIETY NAME

Betty

TEMPORARY OR EXPERIMENTAL
DESIGNATION

KS 84063-2W

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., or) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used. Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

1

1=Common

2=Durum

3=Club

4=Other (SPECIFY) _____

2. VERNALIZATION:

2

1=Spring

2=Winter

3=Other (SPECIFY) _____

3. COLEOPTILE ANTHOCYANIN:

1

1=Absent

2=Present

4. JUVENILE PLANT GROWTH:

1

1=Prostrate

2=Semi-erect

3=Erect

5. PLANT COLOR (boot stage):

2

1 = Yellow-Green

2 = Green

3 = Blue-Green

6. FLAG LEAF (boot stage):

2

1 = Erect

2 = Recurved

1 = Not Twisted

2 = Twisted

7. EAR EMERGENCE:

Number of Days Earlier Than _____ *

0 5

Number of Days Later Than Jagger _____ *

8. ANTER COLOR:

1

1 = YELLOW

2 = PURPLE

9. PLANT HEIGHT (from soil to top of head, excluding awns):

0 6

cm Taller Than Jagger _____ *

cm Shorter Than _____ *

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

10. STEM:

200000155

A. ANTHOCYANIN

☐ 1 = Absent 2 = Present

B. WAXY BLOOM

☐ 1 = Absent 2 = Present

C. HAIRINESS (last internode of rachis)

☐ 1 = Absent 2 = PresentD. INTERNODE (SPECIFY NUMBER) 5☐ 1 = Hollow 2 = Semi-solid 3 = Solid

E. PEDUNCLE

☐ 2 1 = Absent 2 = Present☐ 36 cm Length

11. HEAD (at Maturity):

A. DENSITY

☐ 2 1 = Lax 2 = Middense 3 = Dense

B. SHAPE

☐ 1 1 = Tapering 2 = Strap 3 = Clavate 4 = Other (SPECIFY) _____

C. CURVATURE

☐ 2 1 = Erect 2 = Inclined 3 = Recurved

D. AWNEDNESS

☐ 4 1 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES (at Maturity):

A. COLOR

☐ 1 1 = White 2 = Tan 3 = Other (SPECIFY) _____

B. SHOULDER

☐ 4 1 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate

C. BEAK

☐ 3 1 = Obtuse 2 = Acute 3 = Acuminate

D. LENGTH

☐ 2 1 = Short (ca. 7mm) 2 = Medium (ca. 8mm) 3 = Long (ca. 9mm)

E. WIDTH

☐ 2 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm) 3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

☐ 1 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

☐ 1 1 = Rounded 2 = Angular

C. BRUSH

☐ 2 1 = Short 2 = Medium 3 = Long☐ 1 1 = Not Collared 2 = Collared

D. CREASE

☐ 2 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel☐ 1 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

F. COLOR

☐ 1

1 = White

2 = Amber

3 = Red

4 = Other (SPECIFY)

200000155

F. TEXTURE

☐ 1

1 = Hard

2 = Soft

G. PHENOL REACTION (see instructions):

☐ 4

1 = Ivory

2 = Fawn

3 = Light Brown

4 = Dark Brown

5 = Black

14. DISEASE:

(0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

Stem Rust (*Puccinia graminis* f. sp. *tritici*)☐ 3Leaf Rust (*Puccinia recondita* f. sp. *tritici*)☐ 3Stripe Rust (*Puccinia striiformis*)☐ 0Loose Smut (*Ustilago tritici*)☐ 0Tan Spot (*Pyrenophora tritici-repentis*)☐ 2Flag Smut (*Urocystis agropyri*)☐ 0Halo Spot (*Selenophoma donacis*)☐ 0Common Bunt (*Tilletia tritici* or *T. laevis*)☐ 0

Septoria nodorum (Glume Blotch)

☐ 3Dwarf Bunt (*Tilletia controversa*)☐ 0

Septoria avenae (Speckled Leaf Disease)

☐ 0Karnal Bunt (*Tilletia indica*)☐ 0

Septoria tritici (Speckled Leaf Blotch)

☐ 2Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)☐ 3Scab (*Fusarium* spp.)☐ 1

"Snow Molds"

☐ 0

"Black Point" (Kernel Smudge)

☐ 1Common Root Rot (*Fusarium*, *Cochliobolus* and *Bipolaris* spp.)☐ 0

Barley Yellow Dwarf Virus (BYDV)

☐ 3Rhizoctonia Root Rot (*Rhizoctonia solani*)☐ 0

Soilborne Mosaic Virus (SBMV)

☐ 2Black Chaff (*Xanthomonas campestris* pv. *translucens*)☐ 0

Wheat Yellow (Spindle Streak) Mosaic Virus

☐ 2Bacterial Leaf Blight (*Pseudomonas syringae* pv. *syringae*)☐ 0

Wheat Streak Mosaic Virus (WSMV)

☐ 1

Other (SPECIFY)

☐

Other (SPECIFY)

☐

Other (SPECIFY)

☐

Other (SPECIFY)

☐

Other (SPECIFY)

☐

Other (SPECIFY)

☐

Other (SPECIFY)

☐

200000155

PLEASE SPECIFY BIOTYPE (where needed)

Hessian Fly (*Mayetiola destructor*)☐ 1Stem Sawfly (*Cephus* spp.)☐ 0Cereal Leaf Beetle (*Oulema melanopa*)☐ 0Russian Aphid (*Diuraphis noxia*)☐ 1Greenbug (*Schizaphis graminum*)☐ 1

Biotypes C & F

Aphids

☐

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

Other (SPECIFY) _____

☐

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

Betty, PVP Application

Exhibit D: Additional Description of the Variety

Betty is best adapted to central and western Kansas and has generally performed well in areas where Jagger has done well. Betty has performed poorly in eastern Kansas because of its later maturity.

Betty has dark green foliage and large broad leaves during vegetative growth. It remains dormant during the early spring and does not initiate growth as fast as Jagger.

Betty is resistant to stem rust and moderately susceptible to leaf rust. It has resistance to both soil borne mosaic and wheat spindle streak mosaic viruses. It has excellent tolerance to tan spot and speckled leaf blotch and moderate resistance to glume blotch. It is susceptible to powdery mildew and Hessian fly.

1996 BREEDER SAMPLES

WQL	labnum	Year	Breeder	Nursery Name	VARIETY ID	plot #	Bran	SIZE				NIR	HARDNESS		MILLING	quad-Sr.
								7w	9w	9w	%		SKWCS	SKWCS		
							Color	TWT	overs	%	thrus	hardness	hardness	grade	temper	yield
60436	1996	Sears	HWYT	ARLIN	1	1	white	62.5	87.7	12.2	0.2	na	66.01	HARD	10.6	73.6
60437	1996	Sears	HWYT	RIO BLANCO	2	2	white	60.7	59.7	39.9	0.4	na	70.09	HARD	10.8	71.7
60438	1996	Sears	HWYT	ORO BLANCO	3	3	white	60.9	52.2	46.7	1.1	na	67.08	HARD	10.7	70.2
60439	1996	Sears	HWYT	KS95HW62	18	18	white	62.1	76.5	23.4	0.2	na	69.24	HARD	10.6	72.5
60440	1996	Sears	HWYT	JAGGER	27	27	red	61.4	75.4	24.4	0.2	na	76.74	HARD	10.7	72.0
60441	1996	Sears	HWYT	KARL 92	28	28	red	62.1	79.2	20.7	0.1	na	61.62	HARD	10.8	73.0
60442	1996	Sears	HWYT	KS85W663-11-6-72	30	30	white	61.6	76.8	22.9	0.3	na	55.41	HARD	11.0	72.9
60443	1996	Sears	HWYT	HBKO935-10W	32	32	white	62.7	85.7	14.2	0.1	na	75.99	HARD	10.7	72.2
60444	1996	Sears	HWYT	KS84W063-2W	36	36	white	61.2	75.1	24.7	0.2	na	76.16	HARD	10.5	71.5
60445	1996	Sears	HWYT	KS84W063-3W	37	37	white	62.0	76.3	23.5	0.2	na	77.82	HARD	10.5	72.5
60446	1996	Sears	HWYT	KS84W063-4W	38	38	white	61.7	82.0	17.9	0.1	na	76.58	HARD	10.6	71.1
60447	1996	Sears	HWYT	KS84W063-5W	39	39	white	61.6	67.0	32.7	0.3	na	78.05	HARD	10.6	71.8
60448	1996	Sears	HWYT	KS84W063-6W	40	40	white	61.1	83.8	16.1	0.0	na	74.33	HARD	10.6	70.5
60449	1996	Sears	HWYT	KS84W063-7W	41	41	white	61.5	73.2	26.6	0.2	na	77.63	HARD	10.6	72.1

whites
HWYT

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FLOUR ANALYSIS

MIXOGRAPH

WQL	flour labnum	flour mois% as-is	flour protein % as-is	flour pro % 14% mb	flour ash % as-is	flour ash% 14% mb	flour mixo abs. %	flour mixo peak	flour color L	flour color a	flour color b	flour color	RVA visc.	noodle L @ 0	noodle L @ 24	noodle L @ 48	noodle a @ 0	noodle a @ 24	noodle a @ 48
60436	14.2	12.6	12.6	12.6	0.440	0.441	65.5	3.9	90.4	-1.2	8.2	224	80.5	68.1	65.6	-0.1	1.3		
60437	14.3	12.1	12.1	12.1	0.425	0.427	63.5	3.4	91.4	-1.4	7.9	259	79.8	69.7	68.1	-0.7	0.3		
60438	14.3	12.2	12.2	12.2	0.386	0.387	63.5	4.6	91.6	-1.7	8.6	231	80.7	72.0	70.4	-1.7	0.0		
60439	14.5	10.9	10.9	10.9	0.378	0.380	61.5	3.1	91.5	-1.5	8.2	254	80.7	71.6	69.7	-2.0	0.7		
60440	14.3	12.7	12.8	12.8	0.457	0.458	66.5	4.2	90.4	-1.1	8.7	212	81.5	70.2	67.2	-0.1	1.2		
60441	14.3	12.7	12.7	12.7	0.404	0.405	65.5	5.7	91.2	-0.8	6.5	244	79.8	70.4	68.4	0.2	1.5		
60442	14.1	12.0	12.0	12.0	0.379	0.380	63.5	4.4	92.0	-1.5	7.7	220	80.4	71.5	69.6	-1.9	0.0		
60443	14.4	12.3	12.4	12.4	0.417	0.419	61.5	1.9	90.4	-1.1	7.4	158	81.6	73.5	71.0	-1.6	0.7		
60444	14.5	12.7	12.8	12.8	0.405	0.408	63.5	4.0	90.9	-1.0	7.4	236	81.6	72.5	70.4	-1.7	0.6		
60445	14.4	12.7	12.8	12.8	0.399	0.401	63.5	3.6	90.7	-0.9	6.7	231	81.6	71.9	70.0	-1.4	0.8		
60446	14.4	12.1	12.2	12.2	0.456	0.457	63.5	2.8	90.3	-1.8	9.9	195	79.5	70.7	68.7	-1.9	0.9		
60447	14.5	12.5	12.6	12.6	0.413	0.415	64.5	3.6	90.4	-1.2	8.3	230	80.6	71.3	69.6	-1.6	0.5		
60448	14.2	12.8	12.9	12.9	0.454	0.455	61.5	2.5	90.2	-1.6	9.3	211	80.3	70.4	68.4	-1.8	0.2		
60449	14.3	12.5	12.5	12.5	0.414	0.415	64.5	3.6	90.6	-1.0	6.9	229	81.1	71.6	69.5	-1.5	0.6		

Category
Column

200000155

BAKING

WQL labnum	delta L				delta a				delta b				asc.	bake abs.%	mix time	acid ppm	dough props	loaf volume	grain score	crumb color	note	bake loaf abs.%	loaf volume rating
	noodle b@0	noodle b@24	noodle b@48	over 48 hrs	over 48 hrs	over 48 hrs	over 48 hrs	over 48 hrs	over 48 hrs	over 48 hrs	over 48 hrs	over 48 hrs											
60436	19.4	23.2	23.4	-14.9	2.9	2.1	2.1	4.0	66.5	4.5	38.0	vsb	975	3.8	bright white	pretty nice	S-VS	S					
60437	22.5	25.6	25.6	-11.8	2.1	1.7	5.2	3.1	64.5	4.1	50.0	sb	995	3.8	vsf crmy	good elongations	S	VS					
60438	23.9	29.1	29.1	-10.4	1.7	2.7	4.5	5.2	63.5	4.9	25.0	sb	925	3.8	vsf crmy	nice cells/uniform	SQ	S					
60439	22.1	26.6	26.7	-11.0	2.7	2.7	4.5	4.5	63.5	3.8	50.0	vsb	830	3.8	vsf crmy		SQ	S					
60440	19.4	23.7	23.9	-14.3	2.7	2.1	6.0	4.5	66.5	4.4	25.0	vsb	980	3.8	vsf crmy	v nice grain	SQ	S					
60441	19.2	24.9	25.1	-11.5	2.1	1.9	4.4	6.0	65.5	6.2	0.0	sb	915	3.9	white		S	S					
60442	23.4	27.3	27.8	-10.8	1.9	2.2	6.1	4.4	63.5	4.2	0.0	vsm	935	3.9	vsf crmy	nice top cells	SQ	S					
60443	20.2	26.0	26.3	-10.5	2.2	2.3	5.3	6.1	63.5	2.1	88.0	sm	850	3	white	top open/rough grain	SQ	Q					
60444	21.2	26.0	26.5	-11.2	2.3	2.2	5.7	5.3	64.5	3.9	25.0	vsb	925	3.8	vsf crmy	v uniform/nice crumb	SQ	Q					
60445	19.4	24.7	25.1	-11.6	2.2	2.8	3.5	5.7	63.5	3.7	38.0	sb	925	3.8	white	small uniform cells	SQ	Q					
60446	25.2	29.4	28.7	-10.8	2.8	2.1	5.5	3.5	64.5	3.0	50.0	vsm	930	3.6	crmy	top open/poor color	S	S					
60447	21.3	26.7	26.7	-11.0	2.1	2.0	5.1	5.5	64.5	3.8	25.0	sb	955	3.8	vsf crmy	top open/good along's	SQ-S	S					
60448	23.4	28.6	28.5	-11.9	2.0	2.0	5.8	5.1	63.5	2.9	75.0	vsm	865	3.3	sl crmy		SQ	Q-U					
60449	19.8	25.5	25.6	-11.6	2.0	2.0	5.8	5.8	65.5	3.8	25.0	sb	940	3.8	white		S	S					

234567

WQL labnum	%soft	%semi soft	%semi hard	%hard	s.d. hardness	avg. weight	s.d. weight	avg. diameter	s.d. diameter
60436	2	9	23	66	16.60	36.46	8.36	2.83	0.48
60437	1	4	21	74	15.53	29.30	7.56	2.42	0.45
60438	1	9	23	67	16.54	26.31	7.44	2.23	0.48
60439	0	3	20	77	14.12	30.15	6.46	2.47	0.44
60440	0	1	7	92	13.65	31.61	7.67	2.56	0.44
60441	1	13	33	53	14.69	32.38	6.89	2.50	0.41
60442	7	21	30	42	16.61	31.38	7.14	2.51	0.43
60443	0	1	10	89	14.33	33.06	7.09	2.65	0.43
60444	0	1	8	91	13.80	28.62	6.38	2.34	0.45
60445	1	2	5	92	14.95	29.10	6.90	2.35	0.44
60446	0	2	9	89	15.42	31.19	6.95	2.50	0.50
60447	0	1	9	90	14.78	28.18	6.28	2.33	0.45
60448	1	2	6	91	14.54	31.25	7.01	2.52	0.49
60449	0	1	6	93	13.10	29.65	6.69	2.42	0.47

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

EXHIBIT E STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) Kansas Agricultural Experiment Station	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER KS 84063-2W	3. VARIETY NAME Betty
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Waters Hall Kansas State University Manhattan, KS 66506	5. TELEPHONE (include area code) 785-532-6147	6. FAX (include area code) 785-532-6563
7. PVPO NUMBER 200000155		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain: ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☒ YES ☐ NO
If no, give name of country

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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